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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,214	09/10/2003	David A. Baker	P16915	5720
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BUCKLEY, MASCHOFF, TALWALKAR LLC				
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NEW CANAAN, CT 06840				
EXAMINER				
EDWARDS, ANTHONY Q				
ART UNIT		PAPER NUMBER		
2835				

DATE MAILED: 01/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/659,214

Applicant(s)

BAKER ET AL.

Examiner

Anthony Q. Edwards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/10/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,995,368 to Lee et al. ("Lee" hereinafter). Referring to claim 17, Lee discloses an apparatus (10) comprising a chassis (12) to house a plurality of electronic cards (21-37), the chassis comprising an input plenum (i.e., at front portion of 58) having a first height at a front of the chassis and a second height at a location between the front of the chassis and a rear of the chassis, the first height being greater than the second height (see lower portion of chassis 12 in Fig. 2); an output plenum (i.e., at rear portion of 56) having a third height at the rear of the chassis and a fourth height at a location between the rear of the chassis and the front of the chassis, the third height being greater than the fourth height (see upper portion of chassis in Fig. 2), and a fan (40) disposed in the output plenum. See Figs. 1 and 2 and the corresponding specification.

Referring to claim 18, Lee discloses an apparatus, further comprising an air diverter (44) to divert air toward a first portion (i.e., lower portion) of the fan. See Fig. 4B and the corresponding specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 5, 8, 13, 15, 23, 25-27 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of U.S. Patent No. 5,168,171 to Tracewell. Referring to claim 1, Lee discloses an apparatus comprising a chassis (12) to house a plurality of electronic cards (21-37), a backplane (see col. 4, lines 1-4) housed in the chassis, and a fan (40) housed in the chassis. Lee does not teach a first portion of the fan being lower than a top edge of the backplane, and a second portion of the fan being higher than the top edge of the backplane. Tracewell teaches providing a chassis (10) having a fan (105), wherein the fan is large enough so that a first portion of the fan is lower than a top edge of the backplane, and wherein a second portion of the fan is higher than the top edge of the backplane. See Figs. 2 and 3.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Lee to include a larger sized fan having a first portion lower than a top edge of the backplane and a second portion higher than the top edge of the backplane, as taught by Tracewell, since the device of Tracewell would increase air flow through the chassis of Lee for more effective cooling of the same.

Referring to claim 2, Lee in view of Tracewell disclose an apparatus as claimed. See Fig. 3 of Tracewell, which shows a backplane (128) comprising a front side to receive a plurality of electronic cards, and a rear side, wherein a portion of the rear side of the backplane (128) is

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disposed between the first portion of the fan (105) and a portion of the front side of the backplane. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the apparatus of Lee to provide a backplane comprising a front side to receive a plurality of electronic cards, and a rear side, wherein a portion of the rear side of the backplane is disposed between the first portion of the fan and a portion of the front side of the backplane, as taught by Tracewell, since the device of Tracewell would provide a larger volume of air flow within the system Lee.

Referring to claim 5, Lee in view of Tracewell disclose an apparatus, further comprising an air diverter (44) to divert air toward a first portion (i.e., lower portion) of the fan. See Fig. 4B and the corresponding specification of Lee.

Referring to claim 8, Lee in view of Tracewell disclose an apparatus, wherein the chassis further comprises an input plenum (at front portion of 58) having a first height at a front of the chassis and a second height at a location between the front of the chassis and a rear of the chassis, the first height being greater than the second height (see lower portion of chassis 12), and an output plenum (at rear portion of 56) having a third height at the rear of the chassis and a fourth height at a location between the rear of the chassis and the front of the chassis, the third height being greater than the fourth height (see upper portion of chassis), wherein the fan (40) is disposed in the output plenum. See Fig. 2 of Lee.

Referring to claim 13, Lee in view of Tracewell disclose an apparatus, further comprising an air diverter (44) to divert air toward a first portion (i.e., lower portion) of the fan. See Fig. 4B and the corresponding specification of Lee.

Referring to claims 15 and 23, Lee in view of Tracewell disclose an apparatus as claimed. See Figs. 1 and 2 of Tracewell, which show door (34) at the front of chassis (12), wherein the door is hinged to allow removal of devices from the front of the chassis. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the apparatus of Lee to provide a door at the front of the chassis, as taught by Tracewell, since the device of Tracewell would prevent removal from the top portion of the apparatus of Lee when hot-swapping fans.

Referring to claim 25, Lee in view of Tracewell disclose a system as claimed. Although an Ethernet interface coupled to the backplane is not specifically disclosed, it is notoriously old and well known in the art rack stackable electronic systems to include an Ethernet interface for the LAN architecture. It would have been obvious to one of ordinary skill in the art at the time of the invention to couple an Ethernet interface to the backplane of Lee, since this type of LAN architecture is a well-known standard.

Referring to claim 26, Lee in view of Tracewell disclose a system as claimed, including the backplane comprising a front side to receive the plurality of electronic cards, and a rear side, wherein a portion of the rear side of the backplane is disposed between the first portion of the fan and a portion of the front side of the backplane. See Fig. 3 of Tracewell.

Referring to claim 27, Lee in view of Tracewell disclose a system as claimed, the chassis further comprising an input plenum (at front portion of 58) having a first height at a front of the chassis and a second height at a location between the front of the chassis and a rear of the chassis, the first height being greater than the second height (see lower portion of chassis 12), and an output plenum (at rear portion of 56) having a third height at the rear of the chassis and a

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fourth height at a location between the rear of the chassis and the front of the chassis, the third height being greater than the fourth height (see upper portion of chassis), wherein the fan (40) is disposed in the output plenum. See Fig. 2 of Lee.

Referring to claim 29, Lee in view of Tracewell disclose a system comprising four electronic card chassis, the four electronic card chassis comprising respective ones of a backplane, and a fan (40) housed in the chassis, wherein a first portion of the fan is lower than a top edge of the backplane, and wherein a second portion of the fan is higher than the top edge of the backplane (see Figs. 2 and 3 of Tracewell), and a component rack, i.e., cabinet (not shown), to support the four electronic card chassis. See col. 4, lines 17-21 of Lee.

Referring to claim 30, although Lee, as modified, does not specifically disclose the component rack supporting components having a total height of 42U or less, and wherein a height of at least one of the four electronic card chassis is less than 11U, Official Notice is taken that it is well-known in the art of rack stackable electronic systems to include the standard sizes as claimed, since such sizes would allow for maximum usage of shelf space within the rack.

Referring to claim 31, although Lee, as modified, discloses a system wherein at least one of the chassis comprises an input plenum (at front portion of 58) having a first height at a front of the chassis and a second height at a location between the front of the chassis and a rear of the chassis, the first height being greater than the second height (see lower portion of chassis 12), and an output plenum (at rear portion of 56) having a third height at the rear of the chassis and a fourth height at a location between the rear of the chassis and the front of the chassis, the third height being greater than the fourth height (see upper portion of chassis), wherein the fan (40) is disposed in the output plenum. See Fig. 2 of Lee.

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Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of U.S. Patent No. 5,077,601 to Hatada et al. ("Hatada" hereinafter). Referring to claim 19, Lee discloses an apparatus further comprising a backplane to receive the plurality of electronic cards (see col. 4, lines 1-4). Lee does not teach providing a first portion of the air diverter being higher than a top edge of the backplane. Hatada teaches providing a plurality of air diverters (24, 33) located at various positions within a chassis (see Fig. 21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Lee to provide an air diverter located such that a first portion of the air diverter is higher than a top edge of the backplane, as taught by Hatada, since the device of Hatada would provide diverse streams of airflow to cool the chassis of Lee.

Referring to claim 20, Lee in view of Hatada disclose the air diverter (33) comprising an airfoil. See Fig. 21 of Hatada.

Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of U.S. Patent No. 6,283,850 to Toshimitsu et al. ("Toshimitsu" hereinafter). Referring to claim 21, Lee teaches providing a plenum divider (56/58), but does not specifically disclose a second chassis to house a second plurality of electronic cards. Fig. 12 of Toshimitsu shows first chassis (63) having second chassis (63) mounted thereon, wherein the second chassis inherently houses a second plurality of electronic cards, the second chassis comprising a second input plenum comprising an lower surface and having a fifth height at a front of the second chassis and a sixth height at a location between a rear of the second chassis and the front of the second chassis, the fifth height being greater than the sixth height, wherein the plenum divider of the output plenum comprises the lower surface of the second input plenum.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a second chassis to house a second plurality of electronic cards arranged as claimed, as taught by Toshimitsu, since the device of Toshimitsu would provide simple and effective cooling for a multiplicity of card carrying chassis arranged vertically.

Referring to claim 22, Lee in view of Toshimitsu disclose the apparatus as claimed, wherein the input plenum comprises a lower surface, and further comprising a second chassis to house a second plurality of electronic cards, the second chassis comprising a second output plenum comprising a plenum divider and having a fifth height at a rear of the second chassis and a sixth height at a location between the rear of the second chassis and a front of the second chassis, the fifth height being greater than the sixth height, wherein the plenum divider (666) of the second output plenum comprises the lower surface of the input plenum. See Fig. 12 of Toshimitsu.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Tracewell, and further in view of U.S. Patent No. 6,414,845 to Bonet. Referring to claim 3, Lee, as modified, discloses the apparatus as claimed, except for further comprising a second fan housed in the chassis, wherein the second fan is disposed between the fan and the backplane. Bonet teaches providing a first fan (222) and a second fan (224) housed in a chassis (see Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the apparatus of Lee to include a second fan housed in the chassis, as taught by Bonet, and to locate the second fan between the first fan and the backplane, i.e., directly in front of the first fan, since the device of Bonet would provide the apparatus of Lee, as modified, with an easily accessible secondary fan unit for hot-swapping purposes.

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Referring to claim 4, Lee, as modified, in view of Bonet disclose an apparatus wherein a first portion of the second fan is lower than the top edge of the backplane, and wherein a second portion of the second fan is higher than the top edge of the backplane. See Fig. 2 of Bonet, which shows fan modules (222, 224) in a parallel arrangement for placement within the housing of Lee, as modified.

Claims 6, 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Tracewell, and further in view of Hatada. Referring to claims 6 and 14, Lee, as modified, discloses the apparatus as claimed, except for a first portion of the air diverter being higher than a top edge of the backplane. Hatada teaches providing a plurality of air diverters (24, 33) located at various positions within a chassis (see Fig. 21).

As mentioned above, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Lee to provide an air diverter located such that a first portion of the air diverter is higher than a top edge of the backplane, as taught by Hatada, since the device of Hatada would provide diverse streams of airflow to cool the chassis of Lee, as modified.

Referring to claim 7, Lee, as modified, in view of Hatada disclose an apparatus, wherein the air diverter (33) comprising an airfoil. See Fig. 21 of Hatada.

Claims 9, 11 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Tracewell, and further in view of Toshimitsu. Referring to claim 9, Lee, as modified, discloses the apparatus as claimed, except for further comprising a second chassis. Fig. 12 of Toshimitsu shows a second chassis comprising a second output plenum comprising a plenum divider and having a fifth height at a rear of the second chassis and a sixth height at a location

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between the rear of the second chassis and a front of the second chassis, the fifth height being greater than the sixth height, wherein the plenum divider (666) of the second output plenum comprises the lower surface of the input plenum (666).

As mentioned above, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Lee to provide a second chassis to house a second plurality of electronic cards arranged as claimed, as taught by Toshimitsu, since the device of Toshimitsu would allow for simple and effective cooling for a multiplicity of card carrying chassis arranged vertically for the system of Lee, as modified.

Referring to claims 11 and 28, Lee as modified, in view of Toshimitsu disclose an apparatus, wherein the input plenum comprises a lower surface, and further comprising a second chassis to house a second plurality of electronic cards, the second chassis comprising a second output plenum comprising a plenum divider and having a fifth height at a rear of the second chassis and a sixth height at a location between the rear of the second chassis and a front of the second chassis, the fifth height being greater than the sixth height, wherein the plenum divider (666) of the second output plenum comprises the lower surface of the input plenum. See Fig. 12 of Toshimitsu.

Claims 16 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Tracewell, and further in view of U.S. Patent No. 6,031,719 to Schmitt et al. ("Schmitt" hereinafter). Lee, as modified, discloses the apparatus as claimed, except for the fan being rotatable towards the front of the chassis. Schmitt teaches a removable fan (Fig. 4) having a snap-fit structure (216) for rotatably removing the fan from a base (215).

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It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the apparatus of Lee to include a snap-fit structure for rotatably removing the fan from a base, as taught by Schmitt, to provide an easily accessible and reliable support system for removing the fan from the chassis of Lee, as modified.

Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Tracewell, further in view of Toshimitsu, and further still in view of Bonet. Lee, as modified by Tracewell in view of Toshimitsu, disclose the apparatus as claimed, except for a second fan disposed in the second output plenum. Bonet teaches providing a first fan (222) and a second fan (224) housed in a chassis (see Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the apparatus of Lee to include a second fan, as taught by Bonet, disposed in the second output plenum of the chassis, since the device of Bonet would provide the apparatus of Lee, as modified, with an easily accessible secondary fan unit for hot-swapping purposes.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Q. Edwards whose telephone number is 571-272-2042. The examiner can normally be reached on M-F (7:30-3:00) First Friday Off.

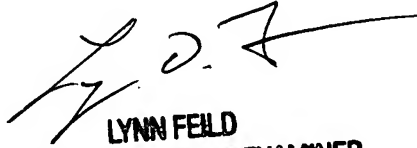
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on 571-272-2800, ext. 35. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

December 27, 2004

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